

## IMPORTANCE OF CAREFUL DISEASE PHENOTYPING IN STUDIES ON DEVELOPMENT OF ASTHMA AND ALLERGIES

*Jon Genuneit, Ulm University, Germany*

*Oliver Fuchs, University of Bern and University of Basel, Switzerland*

*Elisabeth Horak, Innsbruck Medical University, Austria*

*Urs Frey, University of Basel, Switzerland*

*Charlotte Braun-Fahrländer, Swiss Tropical and Public Health Institute, Basel, Switzerland and University of Basel, Switzerland*

*Erika von Mutius, Ludwig-Maximilians-University Munich, Germany*

**the GABRIELA study group**

**Background and Aims:** The protection from childhood allergies and atopic sensitisation by farming environments has been shown in numerous studies. Reports on the 'farm-effect' on wheeze and asthma have been less consistent. We aimed to determine whether protection conferred by exposure to farming was different for various wheeze phenotypes and whether this protection was independent of atopic sensitisation.

**Methods:** The GABRIEL Advanced Studies are cross-sectional multi-phase surveys on exposure to farming environments and its effect on asthma and allergic disease among 79,888 children at age 6 to 12. Detailed data on wheeze, exposure to farming environments, and total and specific immunoglobulin E were collected from a stratified random sample of 8,023 children. A further stratified random sample of 895 children was invited for lung function including bronchodilator response and exhaled nitric oxide measurements. We used adjusted weighted stratified regression analyses to assess effects of farming exposure.

**Results:** We were able to confirm the protective farm-effect on prevalence of childhood atopy and showed also an influence on the degree of atopy. For atopic subjects, no further farm-effect on the prevalence of current wheeze was seen but an effect on exhaled nitric oxide and lung function. Exposure to farming led to decreased prevalence of transient early wheeze and among non-atopic children to decreased prevalence of current wheeze.

**Conclusions:** Exposure to farming environments may affect distinct mechanisms during the development of atopic sensitisation and wheeze. Besides the known effect on atopy, farming affects prevalence of current wheeze among non-atopic subjects, suggesting mechanisms independent of atopic sensitisation. Phenotypic heterogeneity may explain the previously less consistent reports of the farm-effect on wheeze.